

**BIOCHEMICAL BLOCKING LAYER FOR LIQUID  
CRYSTAL ASSAY**

**ABSTRACT OF THE DISCLOSURE**

[0125] A rubbed substrate structure for use in a liquid crystal assay device, includes: a biochemical blocking compound chemically immobilized on a surface of one side of a support forming a biochemical blocking layer; and a biomolecule recognition agent deposited on the side of the support containing the biochemical blocking layer. The biomolecule recognition agent includes a recognition site capable of selectively recognizing a target species to be detected by the liquid crystal assay device. Additionally, the surface of the side of the support containing the biochemical blocking layer is rubbed such that it possesses features that drive a uniform anchoring of liquid crystals when the liquid crystals contact the side of the support containing the biochemical blocking layer. A method for preparing a rubbed substrate structure for use in a liquid crystal assay device, optical cells for use in a liquid crystal assay, liquid crystal assay devices, kits for use in a liquid crystal assay, and methods for detecting the presence of a target species using a liquid crystal assay device are also disclosed.